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(54) Abstract Title
A method and system of purchasing customized shoes

(57) The present invention concerns a method, device an system for the interactive sale of customized shoes, wherein the individual's foot parameters are obtained by a pedometer 11 to prepare a customized insole and the shoe is selected utilizing a computer network. The pedometer 11 may comprise a pressurizable plate that measure foot pressure distribution. Typically, the pedometer contains a large number of sensors for measuring the shape, pressure distribution, gait line, walking patterns and weight distribution of the measured foot. The data representation may be transmitted directly to a production unit 12 capable of producing an insole which may be completely automatic, completely manual or a combination of the both automatic and manual. Communication, line 16, to a system server to support internet sales is envisaged.

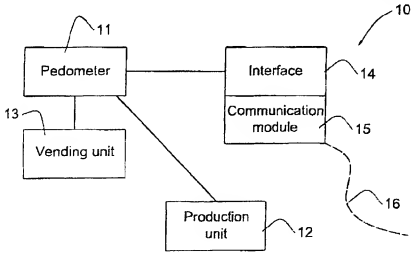

FIG. 1

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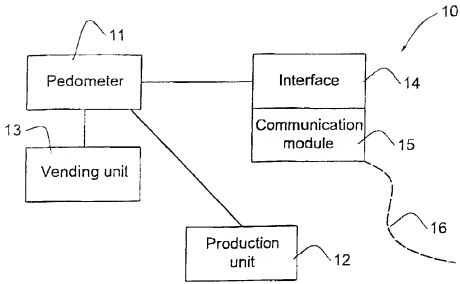
10
11
Pedometer
Interface
14
13
Communication module
15
Vending unit
16
Production unit
12

FIG. 1

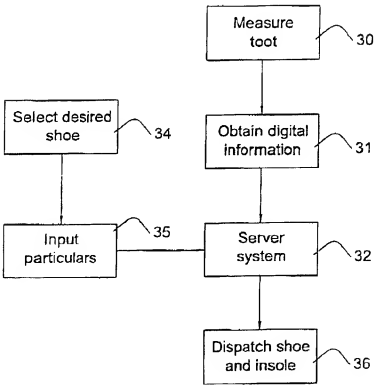
Measure toot
30
Select desired shoe
34
Obtain digital information
31
Input particulars
35
Server system
32
Dispatch shoe and insole
36

FIG. 3

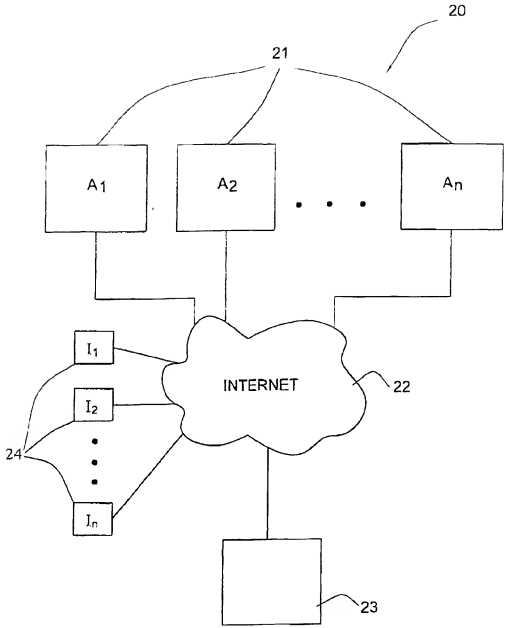

FIG. 2

A METHOD AND SYSTEM OF PURCHASING CUSTOMIZED SHOES

The present invention relates to an apparatus system for the purchase of goods.

The retail shoe industry suffers from two overheads that cut substantially its profits: the size of the store and the amount of sales personnel required executing a sale. Typically shoe stores have to maintain a bulk-occupying inventory, which requires to rent or purchase expensive space solely for the purpose of stocking shoe boxes. In addition, the process of selling a pair of shoes is work-intensive since typically the customer cannot retrieve directly the shoes of the desired size and style, so that each customer has to be assisted by a sales person.

Sales of various goods through the Internet are rapidly increasing in percentage, and it is predicted that in the next couple of years a substantial percentage of all retail commerce will be conducted in electronic form. The provider of goods sold through the Internet benefits from a substantial reduction of overheads and of occupation of stores in expensive areas. While some goods are currently purchased in large numbers through the net (notably such goods such as software and books) other goods have not been successful in penetration into e-commerce due to various logistic reasons as well as due consumer psychological reasons. Some goods are purchased only if the customer can physically *"feel"* or *"try"* the goods. Shoes fall into that category. Typically, a potential customer is reluctant to order by the Internet a pair of shoes from a website, since the

importance of the fit and comfort of the shoe requires that the shoe be physically tried before purchase.

Electronic pedometers are electronic devices that utilizes a barosensitive pressure plate that measures foot pressure distribution either during standing, or during movement (walking, running or jumping). The electronic output of the pedometer can be converted to digital information for various purposes including physical training, correction of posture and for use as data for the production of orthopedic insoles usually used to correct or accommodate posture or foot deformations.

The present invention is based on the realization that it is possible to purchase shoes by the Internet, by choosing the desired shoe style and size and transmitting the choice to a website of the provider. The correct fit of the untried shoe is achieved by producing customized shoe insoles according to data representing the foot parameters of the individual, where the data is produced by a pedometer.

Thus, by one aspect the present invention provides a shoe-selling apparatus comprising:

(a) an electronic pedometer for determining foot parameters of an individual and for obtaining a digital data representation of said parameters;

(b) a user interface permitting an individual to select a shoe type and to initiate a shoe purchasing sequence of said shoe, and to initiate a purchasing sequence of an insole to match the foot parameters, said interface also permitting the individual to input his particulars; and

(c) a communication module for transmitting at least data relating to the selected shoe and the individuals particulars to a system server for subsequent dispatch to the individual of the purchased shoe.

The term *"electronic pedometer"* refers to any apparatus which can measure foot parameters (see below) for example by using barsensitive pressure plates, or by using any other manner known to measure foot parameters and transforming said parameters to a digital data representation. The above term refers both to the electronic apparatus itself as well as to the software associated therewith which enables said transformation. The term *"foot parameters"* typically refers to the shape of the foot – including the length and width of the foot, as well as to foot pressure distribution – reflecting in fact the topology of the shoe. Said foot parameters enables to provide insoles which are customized to the specific foot of the individual as will be explained below.

The term *"user interface"* may be a computer, a cellular telephone, a telephone and the like which enables the individual to transmit data to a system server. By one embodiment the user interface is a touch screen of a computer with pictures of all available show styles, which serve also as a shoe catalogue as will be explained below.

The term *"communication module"* refers to software, or a software-hardware combination, which enables to transmit data from a user interface to a system server. Typically, the communication model is a telephone network (line, telephone or cellular telephone network), an optical fiber network, a point-to-point communication media such as the Internet, etc., together with suitable software for allowing transmitting of information from a user interface to a system server. Typical software is a browser used in the Internet.

The term *"system server"* typically refers to an addressable site in a computer network, for example, a specific site in the Internet. By another example the computer network is a local network such as an Intranet. By yet another example the server is a stand alone terminal that receives data from a plurality of interfaces, processes said data (for example screens it) and transfers the data to a communication network for example the Internet.

The term *"purchasing sequence"* refers to a sequence of activities carried out by the individual leading to purchase of a shoe. These activities at a minimum

are the choice of a shoe of a desired type, transmittal of said choice to the server system (the website) through said communication module together with particulars sufficient for provision of the shoe to the individual at a later date, such as the name and address of the individual, etc. The purchasing sequence may also include a verification of the choice, as well as a sequence of activities for payment, such as input of an account number, the number of a credit or a debit card, verification of the number, etc. The purchase activities also include purchase of the customized insole (for example payment therefore) although the insole may be provided separately as will be explained herein below. The purchase sequence includes both the purchases of the shoe and of the insole. By one business model if the customer proceed with the purchase of the shoe after he/she have obtained an insole than the cost of the insole is refunded. This encourages the client to proceed with the purchase sequence.

The term *"dispatch to the individual of the purchased shoe"* refers to physically providing the individual with the shoe for example by sending it through the mail, or by sending through a specific delivery service.

By one embodiment of the invention, an insole appropriate to the digital data presentation of the parameters is provided by the shoe booth containing the shoe selling apparatus itself, i.e. immediately after measurement of the shoe by an electronic pedometers the insole is provided to the customer. The customer takes the insole, and awaits the dispatch of the selected shoe at a later date. The insole can then be inserted by the customer in the shoe.

By another embodiment of the invention, the digital data representation of the parameters of the individual is transmitted through the communication module, to the system server for provision of an insole, and the insole is provided together with the shoe, either as two separate identities, or alternatively as a shoe having an integral insole.

The insole obtained according to said digital data representation (both in the case where the insole is produced in the shoe selling apparatus itself, and in the case where it is provided together with the shoe) may be prepared by any of the

following two manners. By one manner, the insole is prepared *de novo* according to the digital data representation of the foot parameters unit. Said production unit, is for example a machine (such as a CNC unit) for injecting synthetic material according to digital parameters provided by a computer. Alternatively the insole may be prepare manually or partially manually according to information obtained from the pedometer' optionally supplemented by information inputted by the sales person in the shoe-both (including information obtained by the pedometer itself and information received by other devices. The insole prepared matches precisely the digital representation of the foot parameters. The production unit may be present as part of the shoe selling apparatus itself. By another alternative, the production unit may be connected to the system server, and be used to produce insoles (either automatically manually or a combination of both) at a site removed from the apparatus, said insoles are to be provided together with the shoe.

However, a preferred embodiment of the invention is based on the finding that the data representation of the foot parameters of a specific individual can be compared to data representation in a database containing a plurality of data items each of which relates to a specific foot type. The foot parameters of most individuals can be attributed to a specific foot type. A specific insole is attributed to each general foot type, typically about several tens to several hundreds(for example where 8 models are used per feet per size, a total of 704 foot types) and these types of insoles can represent most of the foot parameters of a given population.

In accordance with the invention, the shoe selling apparatus also comprises a module for (*i*) receiving the digital data representation of the foot parameters, for (ii) comparing said data representation to a database containing a plurality of data items each of which relates to a foot type for which an insole is available, to identify the one with the closest match to said data representation and (iii) for identifying the insole corresponding to said closest match (Optionally the module can give automatic individual analysis on the point of sale or on the server concerning his/her specific foot parameters for example as a computer print out or a digital picture. The information may be classified under a specific ID number for

an individual which will enable the customer to transmit this Id to the system server, to use the ID to purchase an additional shoe without measuring again the foot parameters and to receive the data (pictures, explanations) concerning his/her individual parameters.

Once the identified insole corresponding to the closest match is identified, an insole suitable for the specific foot parameters may be provided. Where the insole is provided in the shoe selling apparatus itself, the provision of the insole may be by manual activity of sales personnel present in a shoe booth containing said shoe-selling apparatus. The sales personnel according to information concerning the identification of the insole of choice may physically reach into an inventory of insole to supply the customer with the insole appropriate to his/her parameters.

By another alternative, the shoe selling apparatus also comprises an insole vending machine, which upon receipt of information regarding the identified insole corresponding to said closest match, can automatically dispatch the desired insole immediately to the customer.

By another alternative, the information concerning the identified insole corresponding to the closest match may be transmitted by the communication module to the system server, and then, part of the dispatch of the purchased shoe to the individual also includes the dispatch of the appropriate insole, either separately, or as an integral part of the shoe. It should be noted that the module for receiving the digital representation of the foot associating it to an appropriate insole, may be present in the system server and not as part of the shoe selling apparatus. In that case the digital representation of the foot parameters is transmitted to the server as *"raw data"*.

It is possible also to combine both the above embodiments – i.e. the *de novo* preparation of an insole or provision of an insole according to a database. This means that in cases where an insole is available according to the foot parameters it is provided to the customer (either by the shoe selling apparatus or together with the purchase shoes), and in cases where no insole is available (due to deformities of the foot), two options may be used: either the customer is informed that customized

shoes cannot be prepared in accordance with his/her specific parameters or, alternatively, only in such rare cases an individual shoe is prepared *de novo* by the production unit.

A selected shoe type is chosen in accordance with a *"shoe catalogue"* which may be present in one of the following manners:

(a) By one possibility, the shoes are physically displayed in the shoe booth as in any conventional shoe store, with each shoe having a specific catalogue number. The customer then transmits to the server's system the catalogue number of the shoe of choice.

(b) By another alternative, the shoe station contains a book or catalogue (on paper) or posters with all types of shoes available, each shoe having a specific catalogue number, to be transmitted to the system server.

(c) By yet another alternative, the user through the communication module, obtains information from the server system (for example from the website) concerning all relevant styles, colors and materials of shoes available. For example, where the server system is a website, the customer can browse through all possible models and colors of the shoes available, and then choose directly in the website, utilizing the user communication system, the shoes of his/her choice.

(d) A slight modification of the above is by use of a touch screen comprising a plurality of pictures of various shoe models, each picture electronically connected through said communication module to the system server, said touch screen being also the user interface.

The present invention further concerns a system for purchasing shoes comprising:

(a) one or more shoe selling apparatuses of the invention;

(b) a system server for receiving particulars relating to the purchasing individual and for receiving data relating to a selected shoe and for

initiating a sequence of supply of purchasing shoes to a purchasing individual.

The above system enables the consumers to purchase shoe, which are customized, or would later on be customized, over the Internet.

Typically, the system server is a computer network addressable site, such as a website. The website may include information regarding all styles, sizes and colors and materials of shoes which are available (either directly on the website, or through connection to other websites), prices for each pair of shoes, menus for choosing the desired shoe, modes for inserting the individual's particulars, such as the name and address so that the dispatched shoe can be provided to the individual. By a preferred embodiment, the site also contains means for obtaining payment by the individual such as software for obtaining information concerning credit or debit cards or any other mode of payment, verifying said information and ensuring the transaction of payment means.

Optionally, the site also may contain information of all possible locations of shoe selling apparatus, so as to enable various users, not necessarily those communicating the site through the shoe selling apparatus, to know where shoes can be purchased by the apparatus of the invention.

The present invention also concerns a method for purchasing shoes comprising:

(i) determining the foot parameters of an individual by an electronic pedometer;

(ii) obtaining digital data representation of said parameters;

(iii) providing an insole matching said foot parameters;

(iv) selecting a desired shoe type and transmitting said selected shoe type and the particulars of the purchasing individual to a system server; and

(v) dispatching to the individual the selected shoe.

As indicated above, the provision of the insole (iii) may be done immediately upon measurement of the foot parameters, at the site of a shoe booth

containing the apparatus of the invention, or the provision of the insole may be carried out at a later date wherein the insole is dispatched together with the shoe.

Against as indicated above, the insole may be prepared *de novo* by a production unit, or produced by a module for associating the digital information representing the foot parameters to a specific identified insole, either locally at the site of measurement of the pedometer or alternatively, by the provider of the shoe utilizing the system server

In order to understand the invention and to see how it may be carried out in practice, a preferred embodiment will now be described, by way of non-limiting example only, with reference to the accompanying drawings, in which:

Fig. 1 is a schematic representation of an apparatus of the invention;

Fig. 2 is a schematic representation of a system of the invention; and

Fig. 3 is a schematic representation of a shoe purchasing sequence in accordance with one preferred embodiment.

Reference is made to Fig. 1 which shows the shoe selling apparatus of the invention 10. The apparatus may be present inside a sort of *"shoe booth"* or *"shoe kiosk"* which will look like a stand (with various advertisement signs) having inside a shoe pedometer, and an interface such as a computer. The shoe booth may be completely interactive (with no sales personnel), but by one embodiment may also have a sales personnel for carrying out any one of the above activities: helping the customer measure his foot by the pedometer, obtaining payment from the customer (if payment obtained is not part of the server system) and in cases where the insole is provided either immediately upon purchase, (and not at a later date together with the purchased shoe) or prepared *de novo* upon purchase, sales personnel may also help physically obtain the insole or aid the production unit with its preparation. The

apparatus comprises a pedometer **11** such as a machine comprising a pressurable plate that measures the foot pressure distribution. Typically, the pedometer contains a large number such as 1024 barsensitive sensors, measures the shape, pressure distribution, gait line, walking patterns, weight distribution, of the individual shoe. An example of such pedometer is Twin Pel manufatured in France. Novell manufactured in Germany.

The electronic information of the foot parameters of the individual is converted by the software module of the pedometer into a digital data representation. The digital data representation may be transmitted directly to a production unit **12** which is capable of producing an insole, which unit may be completely automatic , completely manual or a combination of both manual and automatic. The production unit, may be a machine for injection of synthetic polymers according to the desired information. By another alternative, the information from the pedometer is converted by a module, such as specific software which compares the data representation with a plurality of data items relating to specific foot types, and associating a specific identified insole with the foot type to which foot parameters of the individual belongs. The identified insole may be provided to the customer in one of the following manners:

By one option it is manually provided by the sales personnel to the customer immediately upon purchase from an inventory of insoles (not shown in the figure).

By another embodiment, the insole is provided through a vending unit **13** which is in essence a machine which has an opening for dispatching therethrough the insole of the correct size and shape, shown in accordance with the above module.

It should be understood that the pedometer may comprise either the vending unit (for automatically providing the insole) the production unit (for preparing insoles *de novo*) or both (the first used in cases where the foot parameters are relatively standard, and the second is used where the foot parameters are non-standard) or neither. In the latter case the insole is either provided manually by the sales personnel, or is provided together with the dispatched shoe.

The apparatus also comprises an interface **14** such as a keyboard and screen of a computer. The customer can choose a shoe from a shoe catalogue (for example a physical book present in the shoe booth, an online catalog situated in a local computer network or on the web), a poster with all possible shoe types, a physical representation of possible shoes, etc. and the choice is transmitted via the keyboard thus utilizing the communication model **15** (for example being a software typically known as browsers used for browsing the website, through communication line **16** (being for example a telephone line) to the system server (not shown in Fig. 1). and/or to the shoe manufacturer

Fig. 2 shows the system of the invention **20**. The system comprises a plurality of apparatuses of the invention **21**, each corresponding to apparatus **10** of Fig. 1 denoted $A_1 \ldots A_n$. Each individual apparatus is connected through the Internet **22** to the system server **23** being a specific website, or a stand alone terminal receiving data from a plurality of apparatuses, screening the data and then transmitting it automatically to the Internet server). Beyond individuals who communicate to the server system through interface present in apparatus $A_1 \ldots A_n$, other individuals denoted as $I_1 \ldots I_n$ (**24**) can communicate, through the Internet utilizing their own private interfaces (for example their computer) to the appropriate website **23**. These individuals obtained from the website information regarding the shoe selling apparatus, and shoe selling method of the invention, as well as advertisements of various shoe types and information regarding the physical location of said selling apparatus, and shoe selling booths. Individuals $I_1 \ldots I_n$ may order shoes over the web using their ID code obtained by previous measurements utilizing the pedometers so that they may be customers purchasing shoes a second or further time. The ID may be also stored by the system server so once an individual wishes to purchase a shoe a second or further time input of his/hers particulars will immediately associate his foot parameters so all that is needed is choice of the shoe model. R reference is made to Fig. 3 which shows one embodiment of method of purchasing shoes in accordance with the invention. The method begins by measuring the foot **30** by an electronic pedometer and then

obtaining digital representation of the measured foot **31**. The obtained digital representation is transmitted to the server **32**. At the server the digital representation is used to compare the representation to a database which contains a plurality of parameters each one relating to a specific foot type to which an insole is associated, to identify the appropriate insole to the specific parameters. By this, it is possible to associate an insole, appropriate to said foot type to the closest match.

Sequences **30, 31** and **32** are suitable for provision of an insole. After said sequence, before said sequence or simultaneously therewith, comes a sequence of selecting a shoe **34**, of a desired shoe type, color and material, for example by using the interface board to transmit a catalogue number of a desired shoe, according to information present in a large advertising board present in the booth both which contains the shoe apparatus. The selection may be by putting the catalogue number of the desired shoe through the interface, and transmitting said catalogue number through the Internet to the server. In addition, the individual parameters (such as name and mailing address) should be inputted to the server **35** so that the shoe may be provided to the individual.

The provider of the shoe receives the information from the server system (the website **32**) regarding both the digital representation for providing the insole, and the selected desired shoe, and then dispatches a shoe with the appropriate insole in step **36**, to the individual according to the parameters.

If desired, an additional step may be inserted between steps **35** and **32** –a step of payment – i.e. sending information regarding credit or debit card from the user to the server and verifying said sent information (not shown in the Fig.).

CLAIMS:

1. A shoe selling apparatus comprising:

(a) an electronic pedometer for determining foot parameters of an individual and for obtaining a digital data representation of said parameters;

(b) a user interface permitting an individual to select a shoe type and to initiate a shoe purchasing sequence of said shoe, and to initiate a purchasing sequence of an insole to match the foot parameters, said interface also permitting the individual to input his particulars; and

(c) a communication module for transmitting at least data relating to the selected shoe and the individuals particulars to a system server for subsequent dispatch to the individual of the purchased shoe.

2. A shoe selling apparatus according to Claim 1 further comprising a module for (i) receiving the digital data representation of the foot parameters, for (ii) comparing said data representation to a database containing a plurality of data items each of which relates to a foot type for which an insole is available, to identify the one with the closest match to said data representation and (iii) for identifying the insole corresponding to said closest match.

3. A shoe selling apparatus according to Claim 2, further comprising an insole vending unit for providing the identified insole corresponding to said closest match.

4. A shoe selling apparatus according to Claim 2, wherein the communication module also transmits data relating to the identified insole corresponding to said closest match.

5. A shoe selling apparatus according to Claim 1, wherein the communication module also transmits the digital data representation of said foot parameters.

6. A shoe selling apparatus according to Claim 1, further comprising an insole production unit for producing an insole according to the digital data representation of said parameters.

7. A system for purchasing shoes comprising:

(a) one or more shoe selling apparatuses according to any preceding claim;

(b) a system server for receiving particulars relating to purchasing individual and data relating to a selected shoe and for initiating a sequence of supply of purchasing shoes to a purchasing individual.

8. A system according to Claim 7, comprising a computer network addressable site.

9. A system according to Claim 8, in communication with a production unit for producing insoles in accordance with said digital representation.

10. A method for purchasing shoes comprising:

(i) determining the foot parameters of an individual by an electronic pedometer;

(ii) obtaining digital data representation of said parameters;

(iii) providing an insole matching said foot parameters;

(iv) selecting a desired shoe type and transmitting said selected shoe type and the particulars of the purchasing individual to a system server; and

(v) dispatching to the individual the selected shoe.

11. A method according to Claim 10, wherein the insole matching said foot parameters is provided by the method of (i) receiving the digital data representation of the foot parameters, for (ii) comparing said data representation to a database containing a plurality of data items each of which relates to a foot type for which an insole is available, to identify the one with the closest match to said data representation and (iii) for identifying the insole corresponding to said closest match.

12. A method according to Claim 11, wherein the information of the identified insole is used to provide the individual with an insole at the shoe-selling apparatus site.

13. A method according to Claim 12, wherein the insole is provided by an insole vending unit.

14. A method according to Claim 11, wherein the information of the identified insole is communicated to the system server, and wherein the insole is dispatched to the individual together with the purchased shoe.

15. A method according to Claim 14, wherein the insole is provided as an integral part of the shoe.

16. A shoe selling apparatus substantially as hereinbefore described with reference to Figure 1 of the accompanying drawings.

17. A system for purchasing shoes substantially as hereinbefore described with reference to Figure 2 of the accompanying drawings.

18. A method for purchasing shoes substantially as hereinbefore described with reference to Figure 3 of the accompanying drawings.

Application No: GB 0017254.4
Claims searched: ALL

Examiner: Michael Walker
Date of search: 13 November 2000

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.R): G1X

Int Cl (Ed.7): A43D 1/02

Other: On-line: EPODOC, WPI, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
Y	WO 9117676 A	(FOOT IMAGE) see abstract	1,10
Y	EP 1036515 A	(THREE DIMENSION) see abstract	1,10
Y	US 5659395	(DABBS et al.) see abstract	1,10
Y	US 5515268	(YODA) see abstract	1,10
Y	JP 6203052 A	(NIPPON) see abstract	1,10

X Document indicating lack of novelty or inventive step
Y Document indicating lack of inventive step if combined with one or more other documents of same category.
& Member of the same patent family

A Document indicating technological background and/or state of the art.
P Document published on or after the declared priority date but before the filing date of this invention.
E Patent document published on or after, but with priority date earlier than, the filing date of this application.